



***National
Environmental
Achievement Track
Application Form***

The John Roberts Company
Name of facility

Name of parent company (if any)

9687 East River Road
Street address

Street address (continued)

Minneapolis, MN 55433
City/State/Zip code

Give us information about your contact person for the
National Environmental Achievement Track Program.

Name Jeffrey R. Adrian

Title Director, Environment & Safety

Phone 612-754-4420 or 763-754-4420

Fax 612-755-0394 or 763-755-0394

E-mail jeffadrian@johnroberts.com

Why do we need this information?

EPA needs background information on your facility to evaluate your application.

What do you need to do?

- Provide background information on your facility.
- Identify your environmental requirements.

Section A

Tell us about your facility

1 What do you do or make at your facility?

We are a commercial printer of annual reports, brochures, catalogs, calendars, limited edition art prints, posters, books, direct mail pieces, and promotional pieces.

2 List the Standard Industrial Classification (SIC) code(s) or North American Industrial Classification System (NAICS) codes that you use to classify business at your facility.

SIC
2752

NAICS

3 Does your company meet the Small Business Administration definition of a small business for your sector?

☒ Yes

☐ No

4 How many employees (full-time equivalents) currently work at your facility?

☐ Fewer than 50

☐ 50-99

☒ 100-499

☐ 500-1,000

☐ More than 1,000

5 Does your facility have an EPA ID number(s)?

☒ Yes

☐ No

If yes, list in the right-hand column.

MND 006 159 149 (hazardous waste)
55433-JHNRB-9687E (TRI: no longer a reporter)

6 Identify the environmental requirements that apply to your facility. Use the Environmental Requirements Checklist, at the back of the instructions, as a reference. List your requirements to the right **or** enclose a completed Checklist with your application.

NESHAPS (40CFR 61)
Permits & Registration of Air Sources
Control of VOCs
Visible Emission Standard
HazWaste (40CFR261), characteristic hw
Generator Standards (40CFR262)
Reportable Quantities (40CFR302)
Right-To-Know (29CFR1910.1200)
Community Right-To-Know (40CFR350-372)

7 Check the appropriate box in the right-hand column.

☒ I've listed the requirements above.

☐ I've enclosed the Checklist with my application.

8 Optional: Is there anything else you would like to tell us about your facility?

Please see the attached materials:
1. Recent Tracer Newsletter (see flagged page)
2. EPA case Study #1 for DfE
3. Summary of environmental accomplishments

Please see our Website's Environmental and News
Pages: <www.johnroberts.com>

Why do we need this information?

Facilities must have an operating Environmental Management System (EMS) that meets certain requirements.

What do you need to do?

- Confirm that your EMS meets the Achievement Track requirements.
- Tell us if you have completed a self-assessment or have had a third-party assessment of your EMS.

Section B

Tell us about your EMS.

1 Check **yes** if your EMS meets the requirements for each element below as defined in the instructions.

a. Environmental policy

☒ Yes

b. Planning

☒ Yes

c. Implementation and operation

☒ Yes

d. Checking and corrective action

☒ Yes

e. Management review

☒ Yes

2 Have you completed at least one EMS cycle (plan-do-check-act)?

☒ Yes

3 Did this cycle include both an EMS and a compliance audit?

☒ Yes

4 Have you completed an objective self-assessment or third-party assessment of your EMS?

☒ Yes

If yes, what method of EMS assessment did you use?

☒ Self-assessment

☐ GEMI

☐ Other

☐ CEMP

Internal, periodic, ongoing

☒ Third-party assessment

☐ ISO 14001 Certification

☒ Other Printing Industry of Minnesota

Why do we need this information?

Facilities must show that they are committed to improving their environmental performance. This means that you can describe past achievements and will make future commitments.

What do you need to do?

Refer to the Environmental Performance Table in the instructions to answer questions 1 and 2.

Section C

Tell us about your past achievements and future commitments.

- 1** Describe your past achievements for at least two environmental aspects. If you need more space than is provided, attach copies of this page.

Note to small facilities: If you qualify as a small facility as defined in the instructions, you are required to report past achievement for at least one environmental aspect.

First aspect you've selected

| What aspect have you selected? | What was the previous level (2 years ago)? | | What is the current level? | |
|--|--|-------|----------------------------|-------|
| | Quantity | Units | Quantity | Units |
| Solid waste reduction through increased recycling | 4,307 tons recycled | tons | 6,121 tons recycled | tons |
| <p>i. How is the current level an improvement over the previous level?</p> <p>By steadily increasing our recycling efforts, we have minimized materials disposed of as solid waste and increased the amount of materials we have been able to recycle. Since 1997, we have improved the ratio of trash-to-recycled materials from 1:13.41 in 1997 to 1:14.96 in 1999.</p> <p>ii. How did you achieve this improvement?</p> <p>We utilized a combination of efforts. We regularly practice "dumpster diving" to continually identify and remove materials that may be recycled. We carefully segregate paper trim waste (a normal part of printing) to prevent cross-contamination. We installed a new pneumatic trim waste recovery and baling system to improve capture of this waste stream.</p> | | | | |

Second aspect you've selected

| What aspect have you selected? | What was the previous level (2 years ago)? | | What is the current level? | |
|--|--|-----------------|----------------------------|-----------------|
| Air Emissions | Quantity 2265 | Units pounds | Quantity 879 | Units pounds |
| <p>i. How is the current level an improvement over the previous level?</p> <p>This represents a 42% reduction in total facility HAPs between 1997 and 1999. Please see table enclosed for details.</p> | | | | |
| <p>ii. How did you achieve this improvement?</p> <p>This reduction was accomplished by substitution of cleaning solvents and wetting agents to products that have reduced levels of HAPs.</p> | | | | |

- 2 Select at least four environmental aspects (no more than two from any one category) from the Environmental Performance Table in the instructions and then tell us about your future commitments. If you need more space than is provided, attach copies of this section.

Note to small facilities: If you are a small facility, you are required to make commitments for at least two environmental aspects in two different categories.

First aspect you've selected

- a. What is the aspect? Energy Use
- b. Is this aspect identified as significant in your EMS? ☒ Yes ☐ No
- c. What is the current level? You may choose to state this as an absolute value or in terms of units of production or output.
- ☒ Option A: Absolute value 14,362 kwh (Quantity/Units)
- ☐ Option B: In terms of units of production or output (Quantity/Units)

d. What is the improvement you are committing to over the next three years? You may choose to state this as an absolute value or in terms of units of production or output.

- ☒ Option A:
Absolute value 9,064 kwh
(Quantity/Units)
- ☐ Option B:
In terms of
units of production (Quantity/Units)
or output

e. How will you achieve this improvement?

Installation of a new twin screw , two stage air compressor. This high efficiency unit will replace two other compressors (one 20 years old, the other 10 years old) previously needed to power the system. Along with this installation, the delivery system for compressed air will be reviewed and changes made to minimize pressure leaks.

Second aspect you've selected

a. What is the aspect?

Water use

b. Is this aspect identified as significant in your EMS?

☐ Yes ☒ No

c. What is the current level? You may choose to state this as an absolute value or in terms of units of production or output.

- ☒ Option A:
Absolute value 157,680 ga/yr
(Quantity/Units)
- ☐ Option B:
In terms of
units of production (Quantity/Units)
or output

d. What is the improvement you are committing to over the next three years? You may choose to state this as an absolute value or in terms of units of production or output.

- ☒ Option A:
Absolute value 52,560 ga/yr
(Quantity/Units)
- ☐ Option B:
In terms of
units of production (Quantity/Units)
or output

e. How will you achieve this improvement?

Reduction in wash-water usage for processing graphic arts films will be accomplished with the continued installation of new technology know as direct-to-plate and the removal of film processing equipment.

Third aspect you've selected

- | | | | | | |
|---|--|---|-----------------------------------|---|------------------|
| a. What is the aspect? | Total solid waste | | | | |
| b. Is this aspect identified as significant in your EMS? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | |
| c. What is the current level? You may choose to state this as an absolute value or in terms of units of production or output. | <table border="0"><tr><td><input checked="" type="checkbox"/> Option A: Absolute value</td><td>17,020 lbs/yr (Quantity/Units)</td></tr><tr><td><input type="checkbox"/> Option B: In terms of units of production or output</td><td>(Quantity/Units)</td></tr></table> | <input checked="" type="checkbox"/> Option A: Absolute value | 17,020 lbs/yr (Quantity/Units) | <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) |
| <input checked="" type="checkbox"/> Option A: Absolute value | 17,020 lbs/yr (Quantity/Units) | | | | |
| <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) | | | | |
| d. What is the improvement you are committing to over the next three years? You may choose to state this as an absolute value or in terms of units of production or output. | <table border="0"><tr><td><input checked="" type="checkbox"/> Option A: Absolute value</td><td>2,200 lbs/yr (Quantity/Units)</td></tr><tr><td><input type="checkbox"/> Option B: In terms of units of production or output</td><td>(Quantity/Units)</td></tr></table> | <input checked="" type="checkbox"/> Option A: Absolute value | 2,200 lbs/yr (Quantity/Units) | <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) |
| <input checked="" type="checkbox"/> Option A: Absolute value | 2,200 lbs/yr (Quantity/Units) | | | | |
| <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) | | | | |
| e. How will you achieve this improvement? | We will reduce the use of fuel-blending of waste printing ink (non-hazardous) through increased recycling of this material. We will implement a new procedure for separation by color, and working with our in-house ink supplier, Ink Systems, Inc., will recycle this ink for alternative printing uses (i.e., recycle to outside printers). | | | | |

Fourth aspect you've selected

- | | | | | | |
|---|--|---|-------------------------------------|---|------------------|
| a. What is the aspect? | Habitat improvement | | | | |
| b. Is this aspect identified as significant in your EMS? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | |
| c. What is the current level? You may choose to state this as an absolute value or in terms of units of production or output. | <table border="0"><tr><td><input checked="" type="checkbox"/> Option A: Absolute value</td><td>2 wetland areas (Quantity/Units)</td></tr><tr><td><input type="checkbox"/> Option B: In terms of units of production or output</td><td>(Quantity/Units)</td></tr></table> | <input checked="" type="checkbox"/> Option A: Absolute value | 2 wetland areas (Quantity/Units) | <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) |
| <input checked="" type="checkbox"/> Option A: Absolute value | 2 wetland areas (Quantity/Units) | | | | |
| <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) | | | | |
| d. What is the improvement you are committing to over the next three years? You may choose to state this as an absolute value or in terms of units of production or output. | <table border="0"><tr><td><input checked="" type="checkbox"/> Option A: Absolute value</td><td>2 wetland areas (Quantity/Units)</td></tr><tr><td><input type="checkbox"/> Option B: In terms of units of production or output</td><td>(Quantity/Units)</td></tr></table> | <input checked="" type="checkbox"/> Option A: Absolute value | 2 wetland areas (Quantity/Units) | <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) |
| <input checked="" type="checkbox"/> Option A: Absolute value | 2 wetland areas (Quantity/Units) | | | | |
| <input type="checkbox"/> Option B: In terms of units of production or output | (Quantity/Units) | | | | |

e. How will you achieve this improvement?

We will plant native grasses bordering our natural wetlands on the facility property and will install wildlife habitats (bird and duck boxes). These steps will better address precipitation runoff from facility parking lots and access roadways by providing a natural filter for waters entering these wetlands.

Why do we need this information?

Facilities must demonstrate their commitment to public outreach and performance reporting. You should have appropriate mechanisms in place to identify community concerns, to communicate with the public, and to provide information on your environmental performance.

Section D

Tell us about your public outreach and reporting.

What do you need to do?

- Describe your approach to public outreach.
- List three references who are familiar with your facility.

1 How do you identify and respond to community concerns?

Our employees are seen as our best ambassadors in the community. As such, we go to considerable lengths to keep them informed on environmental issues. We have an environmental contact person available to respond to community issues. And, we hold periodic open houses.

2 How do you inform community members of important matters that affect them?

Mostly, through three avenues. For our employees, we use the Tracer newsletter and its environmental column; for customers and other interested parties, we use our publication JR Notes; and, finally, we utilize our website's Environmental Page. We also voluntarily submit audit results to the state agency and are recognized as a Green Star 9 (audit) facility.

3 How will you make the Achievement Track Annual Performance Report available to the public?

- ☒ Website www.johnroberts.com
- ☐ Newspaper
- ☒ Open Houses
- ☐ Other

- 4 Are there any ongoing citizen suits against your facility? ☐ Yes ☒ No

If yes, describe briefly in the right-hand column.

5 List references below

| | Organization | Name | Phone number |
|---|------------------------------------|------------------|--------------|
| Representative of a Community/ Citizen Group | Minnesota Environmental Initiative | Mike Harley | 612-334-3388 |
| State/Local Regulator | Minnesota Pollution Control Agency | Mr. Edward Meyer | 651-297-8365 |
| | Anoka County Human Services | Mr. Dan Disrud | 763-422-7062 |
| Other community/local reference | LEPC - Coon Rapids Fire Department | Mr. Jim Farmer | 763-767-6471 |

Section E

Application and Participation Statement

On behalf of The John Roberts Company
[my facility],

I certify that

- I have read and agree to the terms and conditions, as specified in the *National Environmental Achievement Track Program Description* and in the *Application Instructions*;
- I have personally examined and am familiar with the information contained in this Application (including, if attached, the *Environmental Requirements Checklist*). The information contained in this Application is, to the best of my knowledge and based on reasonable inquiry, true, accurate, and complete, and I have no reason to believe the facility would not meet all program requirements;
- My facility has an environmental management system (EMS), as defined in the *Achievement Track EMS requirements*, including systems to maintain compliance with all applicable federal, state, tribal, and local environmental requirements, in place at the facility, and the EMS will be maintained for the duration of the facility's participation in the program;
- My facility has conducted an objective assessment of its compliance with all applicable federal, state, tribal, and local environmental requirements, and the facility has corrected all identified instances of potential or actual noncompliance;
- Based on the foregoing compliance assessment and subsequent corrective actions (if any were necessary), my facility is, to the best of my knowledge and based on reasonable inquiry, currently in compliance with applicable federal, state, tribal, and local environmental requirements.

I agree that EPA's decision whether to accept participants into or remove them from the National Environmental Achievement Track is wholly discretionary, and I waive any right that may exist under any law to challenge EPA's acceptance or removal decision.

I am the senior facility manager and fully authorized to execute this statement on behalf of the corporation or other legal entity whose facility is applying to this program.

Signature/Date  August 11, 2000

Printed Name/Title Jeffrey R. Adrian
Director, Environment & Safety

Facility Name The John Roberts Company

Facility Street Address 9687 East River Road
Minneapolis, MN 55433

Facility ID Numbers MND 006 159 149 (hazardous waste)
55433-JHNRB-9687E (TRI: no longer a reporter)



THE JOHN ROBERTS COMPANY

9687 EAST RIVER ROAD • MINNEAPOLIS, MINNESOTA 55433
(612) 755-5500 • FAX (612) 755-6079 • DIRECT 754-4420

Jeffrey R. Adrian
Office of Environmental Director

August 14, 2000

The Performance Track Information Center
c/o Industrial Economics Incorporated
2067 Massachusetts Avenue
Cambridge, MA 02140

Dear Sirs:

Enclosed, please find our application for US EPA Environmental Achievement Track status.

Along with the completed application form, I have enclosed the following supporting material:

- Summary of environmental accomplishments, Year 2000 recipient of the Minnesota Environmental Initiative Award for Environmental Policy
- Summary of HAPs Released (Aspect #2).
- July/August 2000 *Tracer* newsletter, flagged for environmental news
- EPA case Study #1, Design for the Environment (DfE) Printing project
- Four Summaries of previously accomplished environmental projects

Please contact me with any questions you may have.

Kindest regards,

Jeffrey R. Adrian
Director, Environment & Safety
The John Roberts Company

The John Roberts Company
Recipient of The 7th Annual Environmental Initiative Award
Environmental Policy

Company

The John Roberts Company

Location

Coon Rapids, MN

Business

Commercial printer, currently rated the 76th largest in the country

Program

As an industry leader in environmental stewardship, given back to the community through participation in the EPA's long-term efforts to make environmental management cleaner, cheaper and smarter.

Results

The national development and the Minnesota piloting of PrintSTEP, an alternative regulatory and permitting system for the printing industry.

Special Program Participation

1999-2000 Minnesota PrintSTEP Pilot Program
1995-1998 US EPA's Common Sense Initiative
1995-1996 US EPA's Environmental Leadership Pilot
1995 US-Asia Environmental Partnership Program
1992-1996 US EPA's 33/50 Toxics Program
1992 US EPA's Design for the Environment

Awards

1999 William Schaeffer Environmental Award
1999 Minnesota Green Star Recognition
1998 Minnegasco Environmental Leadership Award
1997 Minnesota Governor's Award for Excellence
1997 Minnesota Waste Wise Good Business Award
1997 Great Printers Recognition
1997 Minnesota Green Star Recognition
1996 Minnesota Waste Wise Leadership Award
1992 Minnesota Governor's Award for Excellence

History

The John Roberts Company throughout the 1990's has established its reputation as an industry leader in responsible environmental stewardship. The company has also contributed to several innovative partnership programs with other environmental stakeholders.

These efforts to improve environmental policy and practices include:

- Helping to establish the first industry-regulator partnership between the printing industry and the Minnesota Pollution Control Agency to promote voluntary environmental auditing
- Participation in the US EPA's Design for the Environment effort to find and promote cleaning solvents less harmful to the environment. The company's success became the EPA's Case Study Number One.
- Successful participation in and completion of all goals in the US EPA's 33/50 Toxic Reduction and Elimination Program.
- Contributed to the development of the Minnesota Green Star Program for environmental auditing and participation as a Green Star Member since inception.
- Encourage responsible print specification as an original and continuing Minnesota Great Printer.

Observation and Company Challenge

Observation: When regulatory and permitting systems are less than ideal, there are many stakeholders that find it easy to criticize.

It is much less common that people and companies will commit the time and effort to offer solutions.

Could the John Roberts Company make this kind of commitment and actually have an effect on policy nationally?

Significance of Challenge Addressed

The current environmental regulation and permitting system, developed over the past thirty some years, is often unwieldy and difficult to manage, especially for smaller and mid-sized businesses with more limited resources.

Often, in the past, when new environmental regulation has been imposed by EPA, significant turmoil results with much litigation between stakeholders.

In 1995, the EPA committed itself to explore a new multi-stakeholder effort, the Common Sense Initiative. It was hoped that this consensus-based policy making effort would avoid the costly, time-consuming litigation experienced in the past.

Stated goals included developing alternatives that were cleaner, cheaper, and smarter.

Effectiveness in Outcomes

After four years of development, the Printing Sector Subcommittee to the Common Sense Initiative was able to announce PrintSTEP, the Printer's Simplified Total Environmental Partnership.

While it is early to determine outcomes, the concepts included in PrintSTEP are receiving such favorable response that even before the pilots are completed, elements are being adapted and adopted throughout the country.

Degree of Innovation

PrintSTEP models a new alternative regulatory and permitting system for printers that is multi-media in scope, embraces real community involvement in a meaningful way, and is cleaner, cheaper and smarter for all stakeholders.

It should be noted that PrintSTEP does not change any existing environmental regulations. PrintSTEP simplifies and consolidates these regulations for greater management efficiency.

Most all the elements of PrintSTEP have been tried and been well received in some venue in the country. What PrintSTEP does best is bring those elements together into a cohesive whole where they can work together in concert with one another.

PrintSTEP will be piloted in three states, including Minnesota.

Degree of Collaboration

In order to create PrintSTEP, six separate stakeholder groups had to come to consensus. These include: federal and state regulators, regulated entities, labor, environmental groups, and environmental justice advocates.

Out of this consensus, the PrintSTEP model emerged. PrintSTEP provides three products:

- A Plain Language Workbook, used by printers to determine the environmental impact of their operations and to create their facility's PrintSTEP Agreement, replacing multiple permits
- A Community Handbook that helps communities develop a working relationship with printers and educates the community about environmental impacts of printing
- A State Implementation Guide to assist state regulatory agencies in implementing PrintSTEP in their own state

Minnesota Based Excellence

Now that the design phase of PrintSTEP has been completed, the State of Minnesota applied for and was successful in obtaining a US EPA grant to pilot the program in Minnesota.

In Minnesota, PrintSTEP will be piloted in Stearns and Benton Counties.

Replicability

The Minnesota Pollution Control Agency is eager to pilot PrintSTEP because it sees value in the program, especially with the thought of replicating the concepts in PrintSTEP in other industry sectors that pose a greater concern from environmental impact.

Unlike typical environmental regulation that is imposed from the top, the elements of the PrintSTEP program are thought to be so good that all stakeholders will simply demand that they have access to them---a bottom up, word-of-mouth approach to change that embraces environmental stewardship.

Results for the John Roberts Company

The John Roberts Company takes great pride in its four years of participation in PrintSTEP development during the EPA's Common Sense Initiative. It is indeed unusual for a company of this size to actually make an impact on environmental policy.

The company is continuing its commitment through its participation in Minnesota's PrintSTEP Pilot Program, helping the Minnesota Pollution Control Agency to implement the program by establishing Minnesota's own multi-stakeholder group in the pilot counties.

Summary of HAPs Released

August 9, 2000

The following is a Summary of individual Hazardous Air Pollutants (HAPs) tracked by the John Roberts Company and reported as releases to the environment.

| HAP Name | CAS# | 1997 Releases - lbs. | 1999 Releases - lbs. |
|------------------------|-----------|----------------------|----------------------|
| Ethyl benzene | 100-41-4 | 0.60212 | 0.27640 |
| Methyl carbitol | 111-77-33 | 16.18018 | 28.42461 |
| Butyl carbitol | 112-34-5 | 2,037.73673 | 160.55359 |
| Hydroquinone | 123-31-9 | 63.19730 | 33.67097 |
| Butyl carbitol acetate | 124-17-4 | 0.01160 | 81.83768 |
| Xylene | 1130-20-7 | 100.82630 | 389.78324 |
| Hydrochloric acid | 7647-01-0 | 0.52900 | - |
| Toluene | 108-88-3 | - | 0.00226 |
| Formaldehyde | 50-00-0 | 0.00720 | 0.08371 |
| Cumene | 98-82-8 | 46.69000 | 184.60000 |
| Annual Totals All HAPs | | 2265.78044 | 879.23346 |

Summary of Earlier Environmental Projects

The John Roberts Company

August 11, 2000

Following are a collection of previous environmental projects summarized for your review:

VOC Reduction 1 (1990-1993)

The John Roberts Company, a commercial lithographic printer using both sheet fed and heatset web technologies, wanted to build upon earlier successes in reducing the amount of volatile organic compounds (VOCs) generated at its facility. In lithographic printing, the major sources for emissions of VOCs are the cleaning solvents, printing inks, and fountain solutions containing wetting agents. By addressing all of these sources for potential VOC emissions, we believed that we could significantly reduce overall VOC emissions from our facility. Such a reduction would be consistent with our company's expressed environmental commitment to reduce pollution, it would improve community air quality and reduce emission fees assessed the company, and it would pro-actively address Title V air permitting issues as well.

To accomplish our considerable goals, the company would invest in equipment, establish new work practices, and substitute alternative chemistries wherever possible. As in our earlier successes, we firmly believe that the effectiveness of any change directly correlates to the degree of employee involvement. Employees need to understand both why change is necessary, and what part they are to play in making that change happen.

Of the three major contributors for potential VOC emissions (identified above), in 1993, John Roberts Company had their greatest successes working with cleaning solvents and fountain solutions.

By building upon new work practices and the selection of low vapor pressure solvent blends, both implemented in September of 1992, the use of cleaning solvents was reduced in 1993 by 14.8%. In addition to fewer solvents being purchased, our refined solvent blend made possible a 28.5% increase in recovery of spent solvent from soiled shop towels. Taken together, these improvements allowed for fully 50% more captured VOCs, approximately 13,000 pounds, that would otherwise escape to the atmosphere. A simplified low vapor pressure solvent blend also has additional benefits. In the second half of 1993, the company was able to close the recycling loop to its own facility. Instead of fuel blending waste spent solvent as before, we now process by distillation these spent solvents off site, recovering the solvent for re-use at our own facility. This eliminated entirely the more than \$24,000 annual cost for disposal via fuel blending for this waste stream!

Fountain solutions, essentially wetting agents, used in lithography traditionally have incorporated the use of isopropyl alcohol. John Roberts Company eliminated the use of alcohol in their fountain solutions several years ago, and has been working with alternative chemistries. The challenge has been to make these alternatives perform in our production, not an easy task. Through continued testing of various substitutes, we have been able to reduce the VOC content of our fountain solution to less than 1.6%. This

compares very favorably with up to 15% VOC content of alcohol-based fountain solutions. Additionally, with careful selection of alternatives, our experience has been that we consume our fountain solution rather than have it "go bad". The significance of this fact is that we have eliminated much of the previous sewerage of spent fountain solutions, with a positive effect upon our water discharges.

All of our employees, as members of self-managed work teams, are directly aware of the company's pollution prevention and waste minimization program. Each employee, whether their team is involved with materials selection and purchase, development of new work practices, or testing of new products, knows that they bear direct responsibility for environmental stewardship. Helping them with technical considerations are members of the Safety & Environmental Committee and the Environmental Director.

ENVIRONMENTAL ECONOMIC BENEFITS

The following reductions in emissions of volatile organic compounds (VOCs) have resulted from our program. These figures compare emissions in 1992 with emissions in 1993.

1992 VOC Emissions

| <u>Source Material</u> | <u>Pounds of VOCs</u> | <u>Air Emissions</u> | <u>Recovered</u> |
|------------------------|-----------------------|----------------------|------------------|
| Cleaning solvents | 76,729. lbs. | 41,434. lbs | 29,929. lbs. |
| Fountain solutions | 11,369. lbs | 11,369. lbs. | |
| Other sources | | 6,958. lbs | |
| Total | | 59,761. lbs | |

1993 VOC Emissions

| <u>Source Material</u> | <u>Pounds of VOCs</u> | <u>Air Emissions</u> | <u>Recovered</u> |
|------------------------|-----------------------|----------------------|------------------|
| Cleaning solvents | 60,062 lbs. | 13,960. lbs | 39,051. lbs. |
| Fountain solutions | 9,685. lbs | 9,685. lbs. | |
| Other sources | | 6,484. lbs. | |
| Total | | 30,129. lbs. | |

As you can see, total VOC reductions amounted to 14.82 TPY between 1992 and 1993. Because the recycling of all cleaning solvents and elimination of fuel blending was not implemented until the later part of 1993, the projected annual savings, estimated to be more than \$24,000, through the elimination of fuel blending costs for the spent solvent waste stream, were not fully realized until 1994.

Minnesota 50-EPA 33/50 (1992-1993)

The John Roberts Company, a commercial lithographic printer using both sheet fed and heatset web technologies, in 1992 made a commitment to participate in the voluntary Minnesota 50 Project to significantly reduce or eliminate entirely any usage of the seventeen targeted toxic chemicals. Such a reduction would be consistent with our company's expressed environmental commitment to reduce all forms of pollution, it would create a healthier work environment for our employees, it would improve community air quality and reduce emission fees assessed the company, and it would proactively address Title V air permitting issues as well.

To accomplish our considerable goals, the company would invest in equipment, establish new work practices, and substitute alternative chemistries wherever possible. As in our earlier successes, we firmly believe that the effectiveness of any change directly correlates to the degree of employee involvement. Employees need to understand both why change is necessary, and what part they are to play in making that change happen.

At the John Roberts Company, there were four specific targeted toxic chemicals, all associated with various cleaning solvents used to maintain printing presses. Those chemicals were toluene, 1,1,1 trichloroethane, methyl ethyl ketone (MEK), and methyl isobutyl ketone (MIBK). Our goals were;

- Reduce the use of toluene from 5,718 pounds used in 1992 to just 95 pounds in 1993.
- Reduce the use of 1,1,1 trichloroethane from 7,623 pounds used in 1992 to a total of 220 pounds used in 1993. **All usage would cease by April 15, 1993.**
- Continue to reduce the use of methyl ethyl ketone (MEK) to 100 pounds in 1993 from a high of 3,937 pounds used in 1988.
- Completely eliminate methyl isobutyl ketone (MIBK) in 1993.

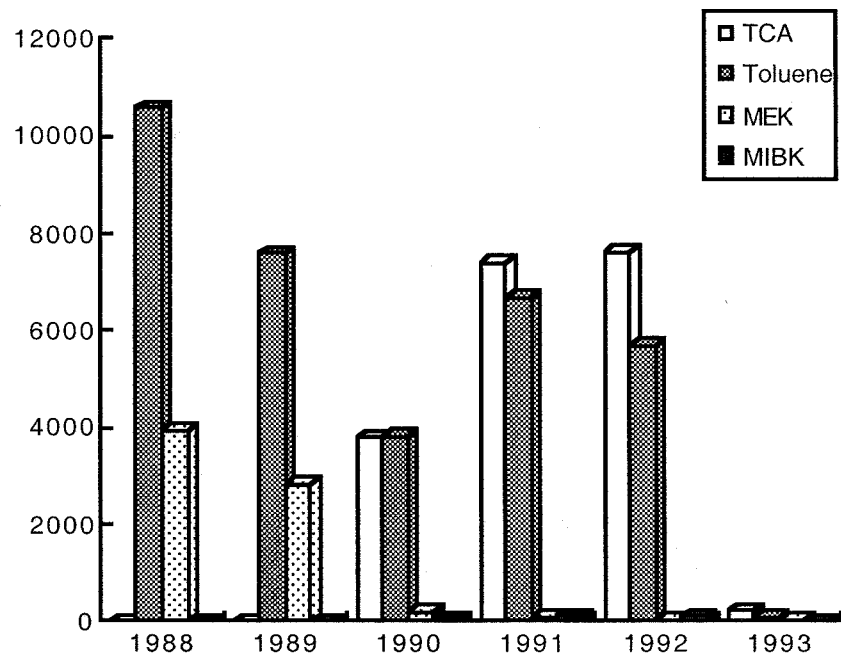
All of our employees, as members of self-managed work teams, are directly aware of the company's pollution prevention and waste minimization program. Each employee, whether their team is involved with materials selection and purchase, development of new work practices, or testing of new products, knows that they bear direct responsibility for environmental stewardship. Helping them with technical considerations are members of the Safety & Environmental Committee and the Environmental Director.

ENVIRONMENTAL ECONOMIC BENEFITS

The following reductions in usage of targeted toxic chemicals were achieved by the John Roberts Company in 1993.

1993 Toxics Usage

| <u>Targeted Chemical</u> | <u>Pounds Used in 1993</u> |
|-------------------------------|----------------------------|
| toluene | 285 lbs. |
| 1,1,1 trichloroethane | 220 lbs. |
| methyl ethyl ketone (MEK) | 114 lbs. |
| methyl isobutyl ketone (MIBK) | 0 lbs. |



VOC Reduction 2 (1994-1995)

The John Roberts Company, a commercial lithographic printer using both sheet fed and heatset web technologies, wanted to build upon earlier successes in reducing the amount of volatile organic compounds (VOCs) generated at its facility. In high volume web printing, one major source for emissions of VOCs are the heatset printing inks that dry through the application of heat. Upgrading to the best available control technology would reduce overall VOC emissions from our facility, and significantly conserve on our natural gas consumption. Such a reduction would be consistent with our company's expressed environmental commitment to minimize or eliminate all emissions, while supporting our efforts to practice energy conservation, and improve air quality in our community. The company would also benefit from reduced emission fees assessed by government and maximize operating flexibility under Title V air permitting protocols.

In the Fall of 1994, the company made the decision to invest five million dollars in a new state-of-the-art heatset web printing press to be installed in mid-1995. This new press would allow our business to meet the demands of market expansion. Heatset web presses deliver printed materials at high speeds and large volumes, and so inks utilized on this type of press dry by the application of heat in long dryers. The hot gases that result are a potential significant source of volatile organic compounds (VOCs), contributors to poor air quality. These hot gases were captured and destroyed using catalytic oxidizers in the company's previous three heatset web press installations.

Our options for the proposed new press would include: 1) installation of new air emissions controls similar to our existing catalytic oxidizers for the other presses; 2) the replacement of our existing catalytic oxidizers with a single catalytic oxidizer sized to handle the air emissions from the combined presses; and, 3) replacement of our existing catalytic oxidizers and installation of a thermal oxidizer sized to handle the air emissions from the combined presses.

Many factors would be examined in determining the best choice for meeting the requirements of air emissions control. Among these factors would be technical, political, regulatory, and economic considerations. In evaluating our options, we would consider operating efficiency, operating reliability, flexibility for company growth, perceived community concerns, energy efficiency and conservation, future regulatory restrictions, annual operating costs, capital expense, equipment service life, return on investment, cost of money (financing), and consistency with expressed company policy on environmental stewardship.

A team consisting of web press production personnel, the company's Director of Manufacturing, the Environmental Director, and the Vice-President of Finance, along with potential vendors would collect data, define and evaluate the proposed alternatives, and select the most appropriate technology based upon the factors listed above.

The technology for air emissions control that was ultimately selected was Option Three, replacement of existing catalytic oxidizers with best available control technology in the form of a single thermal oxidizer serving all heatset web presses. Major factors that lead to this decision included:

- **Higher operating efficiency** allows for 99.9% destruction of VOCs. Previous destruction efficiency was 94%.

- **Dependable operation** with no concern for possible catalyst contamination. Elimination of costly performance testing as a permit requirement.
- **Elimination of odors.** Catalysts, like those on automobiles, sometimes will emit an odor. No odor complaints from residential neighbors!
- **Confidence** that best available control technology (BACT) will not soon need expensive upgrading to comply with some future regulatory requirement.
- **Best payback** when thermal oxidizer service life expectancy is considered.
- **Reduced energy consumption** in the form of natural gas and electricity. Thermal oxidizer (Option Three) would consume one-third the natural gas as would have been consumed with the least costly capital investment.
- **Cost-of-money economics** determined that best available control technology would cost the company only \$3,000 more per year than the least expensive capital investment would have cost.
- **Consistency** with the company's commitment to leadership in environmental stewardship.

Implementation of the team's decision to install best available control technology in the form of a single thermal oxidizer serving all heatset web presses was committed to in December of 1994. Construction and start up of the thermal oxidizer was completed in July 1995, with the new web press scheduled to be connected to the system in August. The company's net investment, including installation costs, amounts to approximately \$340,000 after sale of the previous catalytic equipment. Operating costs, mostly natural gas, is expected to be approximately \$24,000 per year. This compares very favorably with the projected natural gas costs of \$76,000 had the company selected the "least expensive" option (Option One).

Additional benefits include the elimination of any possibility of odor. This was an important factor to the company as a new homes with selling prices exceeding \$300,000 were being sited just across the road from our facility.

The company realizes that its own employees are the best ambassadors to the local community on issues such as the responsible environmental stewardship. Because all our employees have been kept informed, and indeed had a hand in our decision to install thermal technology, they are in the best position to share our environmental success with the community.

Energy Conservation 1 (1993-1995)

The John Roberts Company, a commercial lithographic printer using both sheet fed and heatset web technologies, in 1993 began a long-term commitment to finding means of reducing the company's consumption of energy used in producing its products. Two major areas for concentrated effort would be electric energy and natural gas, both being essentially non-renewable energy forms.

In 1993, the company conducted an energy management analysis that identified nineteen separate opportunities with varying payback periods and potential savings. Some of these opportunities included relamping, occupancy sensors, motor replacements, and changes in operational methods such as load shedding. Recognizing that immediate implementation of all identified opportunities was impractical, the company has in turn evaluated each opportunity available and plans to implement many of the suggestions over a period of several years as technology and budgeting allows.

In 1994, John Roberts Company made the commitment to install a propane-based secondary fuel system to supply standby fuel for its production operations, primarily web press dryers. The company rationale was that instillation of a propane standby system would be consistent with both lower fuel costs for the company, and greater efficiency of delivery possible for our supplier of natural gas, especially in times of high demand. The pending removal of the company's one remaining underground storage tank, now used for fuel oil backup for boilers, was an additional benefit to be gained by the instillation of this backup system.

In 1995, the company installed a state-of-the-art thermal oxidizer for controlling air emissions from web press dryer exhaust. Though not required by the company's Air Permit, this best available control technology not only destroys 99.9 percent of all volatile organic compounds (VOCs), total natural gas usage for emissions control at the facility was reduced to one-third the amount used previously, with savings exceeding \$50,000 annually. This natural gas usage reduction is possible (even though the thermal oxidizers operate at higher temperatures than catalytic oxidizers) due to heat recovery incorporated in the thermal oxidizer design. Additionally, considerable electrical energy is saved with this system which uses a variable speed fan drive rather than a conventional electric motor. The unit was selected with the future in mind: a planned building expansion will also utilize heat from the thermal oxidizer for space heating.

Safety and Environment

by Jeff Adrian (*The Toxic Waste Avenger*)

Business Continuity Plan In Development

You may never have thought of this, but just exactly what would the company do to restore its ability to resume business in the event of a catastrophe of some sort? When you consider the number of families dependent for their livelihood, such a question is not altogether irrelevant!

Well you will be glad to know that such an extensive plan is being developed. As an extension of the risk management already in place for environmental and safety issues, the company's environmental director is leading a multi-year effort to put such a plan in place. Beginning last Fall, and continuing throughout all of this year, a written plan will be completed by December 10th, after which there will be about six months of testing and approval.

A comprehensive Business Continuity Plan addresses all every critical business function and production step, looking at critical equipment needed and the various job dependencies between departments. What exists in the way of computer backup? Where would we temporarily relocate employees so they could perform their work? How would we stay in regulatory compliance? What steps would be needed to maintain our vital communications, both internally and with the outside world (customers and suppliers)? How would we replace production equipment? Do we have appropriate and enough insurance to carry the company through a crisis?

It is said that only about one-half of one percent of all companies ever have the need to implement a Business Continuity Plan after a crisis, and that is a good statistic. But if your company is the one in need, then it's 100% in need. Time counts. This is not the time to begin looking through the Yellow Pages for help.

Though the likelihood of actual implementation is very small indeed, just having a tested Business Continuity Plan can be an asset in itself. How, you might ask?

Well think of it this way, if you were considering becoming a customer of John Roberts Company, you might look at such things as ISO certification and performance, environmental stewardship practices, and safety records. You might, as a prospective customer, also find considerable comfort in knowing that your supplier is prepared to handle a production emergency.


After all, our customers depend on us to meet their needs on time!

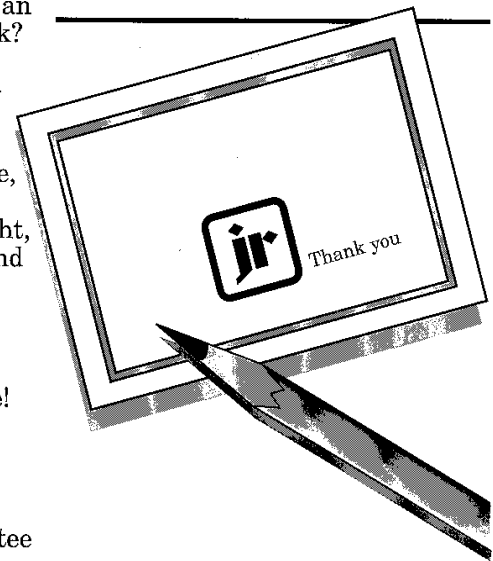
Support Ronald McDonald House

Brought up in the most recent Safety & Environmental Committee meeting was the suggestion that we begin collecting soda pop can tabs for a good cause.

The Ronald McDonald House program offers families of seriously ill children a temporary home in which to stay during medical treatment for their illness. During these stressful times for the families, having an affordable and comfortable "home" is very supporting and welcome.

By collecting pop tops, you can contribute to this worthwhile cause. Recently, more than 35,000 pounds of aluminum pop tops were contributed by a car club, the dollar value of the aluminum directly aiding this fine cause.

By the time you read this, collection containers in the form of miniature Ronald McDonald Houses will be placed throughout the facility for your convenience. Please consider helping. 



REMEMBER
TO BRIGHTEN A
CO-WORKERS DAY
WITH A
"THANK YOU CARD!"

design FOR THE ENVIRONMENT

P R I N T I N G P R O J E C T



MANAGING SOLVENTS AND WIPES

This case study is brought to you by the U.S. Environmental Protection Agency's (EPA's) Design for the Environment (DfE) program. Through the DfE program, government and industry are working together to identify alternative products and processes that are safer for the environment.

This is the first in a series of case studies that EPA is developing to illustrate the DfE theme. This study describes a successful pollution reduction program at the John Roberts Company in Minneapolis, Minnesota. Although the company did not have access to risk and impact information,

In particular, this case study illustrates:

- How a self-audit of solvents used in printing operations led to the substitution of more environmentally appropriate solvents.
- How the use of a centrifuge to extract solvents from industrial wipers prior to laundering resulted in reduced solvent in the laundry's wastewater.
- How this company saved money through its efforts to use safer solvents and reduce waste.

The story of this company's experience, and the steps it followed, show how problems can become opportunities and how environmental planning can be good for business.

Background

The John Roberts Company is a commercial printer of annual reports, brochures, catalogs, forms, limited edition fine art prints, and direct mail pieces using both sheet-fed offset and web offset printing processes. The company began to really understand its solvent use practices as a result of a problem encountered by the industrial laundry that washes the company's press wipers. The effluent from the laundry had become a concern to the local regulatory agency that oversees the sanitary sewer system in the Minneapolis metropolitan area.

Understand The Problem

The John Roberts Company uses leased towels as wipers for press cleanup. The company was sending its leased towels

to an industrial laundry for cleaning, and with them went a great deal of ink and "spent" solvents. The presence of these solvents in the wipers was creating a problem for the laundry and for the local sanitary sewer system that handles the effluent from the laundry. The two major concerns were volatility and flammability.

The local regulatory agency approached the industrial laundry because too much solvent was being washed out of the towels, causing the vapors from the laundry's effluent to exceed the lower explosive limit (LEL).

The laundry, in turn, asked its major printer customers and a trade association, the Printing Industry of Minnesota, Inc. (PIM), to work out a solution. There were incentives for both parties: the laundry would be able to retain its business, and the printers would be able to continue using leased towels.

Consider Possible Solutions

The John Roberts Company decided to concentrate on two main objectives: (1) to change the nature of the solvent that was left in the towels from cleaning presses, and (2) to reduce the volume of solvent left in the towels.



Change The Nature Of The Solvents

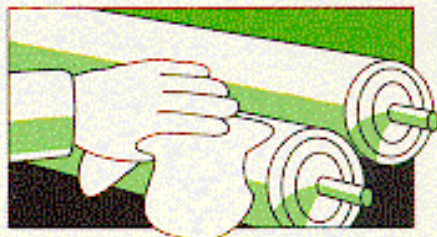
Finding An Alternative

The first step was to examine the nature of the solvents used to clean the presses to see if a less volatile substitute could be used. More information was needed about the tasks solvents must accomplish and the conditions under which these solvents perform.

As a result of thorough discussion with everyone involved in the process, the company prepared a list of necessary solvent criteria:



- For washing press blankets, a solvent must work quickly to cut ink, leave the blanket free of any oily residue, and dry almost immediately. Time and the ability to get back up to color quickly is critical during a press run.
 - For cleaning the metal parts of a press, a slower-working solvent would be suitable as a general press wash.
 - For cleaning the chain of ink rollers, a solvent that is slow to evaporate is needed. This solvent must not flash off before it has gone through the entire sequence of rollers or it will fail to clean them adequately.
 - On a limited basis, a very aggressive solvent is needed for removing hardened ink that sometimes collects on the press.
- In light of these criteria, the company's first task was to find a blanket wash that balanced these production needs with the environmental needs of less volatility and flammability.



Press operators prefer solvents that flash off quickly and do not require a lot of wiping or leave behind an oily film. Unfortunately, most solvents with these desirable properties also create problems for industrial laundries by exceeding the LEL level. When the John Roberts Company audited its operations, it discovered that press operators had been using a highly volatile solvent called type wash as a general, all-purpose solvent, including for blanket cleaning. This product was a blend of acetone, toluene, methyl ethyl ketone (MEK), and isopropyl alcohol and contributes not only to in-plant volatile organic compounds (VOCs) in the air, but also to problems with the laundry's effluent.

This solvent was never intended for all-purpose use, but using the solvent had become a habit that was hard to break. Because it flashed off so readily, no time was lost by press personnel. It was easy to see why the solvent was so popular.

As the company analyzed the product's properties further, however, it found that almost one-half the total volume of the solvent was wasted. It simply evaporated before

design for the environment

the work could be performed! The goal was to find a substitute solvent that was better matched to the tasks it was to perform and that did not substantially affect work procedures or productivity.

Work Together To Implement Changes

It is important to recognize that it was not sufficient to simply look for a technical solution to the problem. For success to be possible, the support of upper management was vital, as well as the cooperation and understanding of press personnel. Management gave its support by assuring plant personnel that learning to work with new solvents might involve some procedural changes that could affect productivity slightly, but that small losses would not reflect negatively on overall performance evaluations. Input was sought from each press person and floor helper. The reasons why it was necessary to change solvents and how the change was to be accomplished were explained to them.

The raising of awareness in the effort to find a substitute resulted in a reduction in the misuse of the type wash solvent. Type wash usage was reduced from 152 to 5 fifty-five-gallon drums in the first year. The

company still uses type wash, but only where its use can be justified. A new replacement solvent, an ultra-fast blanket wash, was blended especially for the company and performed well with respect to speed and lack of an oily film.



Only 38 fifty-five-gallon drums of this new blanket wash were purchased in the first year. Even after including the purchase of the replacement solvent, the John Roberts Company realized a savings of more than \$18,000 in the first year by changing solvents and using them more prudently. More importantly, by selecting a replacement solvent blend with a lower evaporation rate and by strictly limiting the use of type wash, the contribution of vapors from the John Roberts Company to the laundry's effluent no longer exceeded the LEL and was no longer a concern.

Make Additional Improvements

There were, however, some lingering concerns with the new solvent. One ingredient in the new blanket wash was 1,1,1 trichloroethane (TCA), which gave the blend some of its performance characteristics, but is being phased out because it is an ozone depleter and a suspected health hazard. TCA will soon be banned by the Montreal Protocol, an international treaty to eliminate the manufacture of ozone depleters.

The company therefore continued its investigation of alternatives, this time with an emphasis on

reduction of fugitive VOC emissions. It reformulated its blanket wash to a less volatile press wash that contains no TCA. The company approached its search for a substitute with reduced VOC emissions with the realization that vapor pressure plays an important role. A solvent with a lower vapor pressure will evaporate less readily and will release less VOC emissions to the air. Therefore, when the goal is reduction of fugitive VOC emissions, volatility should be considered.

Early results from this change show that because considerably less solvent is lost to the air through evaporation, the company is purchasing four fewer drums of solvent each month. However, four more drums of spent solvent are removed from the rags and sent off-site for fuel blending. In spite of the costs to manifest and ship this solvent, the company still saves \$100 per month. In addition, the John Roberts Company has lower fugitive emissions and a healthier workplace.

During trials for new solvent blends, the company's management came to a critical realization: the way in which a product is used is key to its performance. The company found that testing the same product on different presses using different crews produced widely varying results. The success of the solvent changes the company made was due largely to the development of a very specific procedure for solvent use, which was developed by the press operators themselves.

Reduce The Volume Of Solvent

The second objective was to reduce the volume of solvents left in the towels. With the help of its trade association, the Printing Industry of Minnesota, Inc. (PIM), the company began to explore ways to "wring out" the wipers.

The first step was to make sure efforts to train employees not to dump excess solvent in the pile of used wipers had not eroded. Confident that training had assured that the rags put in the used rag container retained the "minimum" amount of solvent, the company explored the use of a commercial grade laundry centrifuge to separate out any remaining solvent. The company was surprised to learn that the "minimum" amount of solvent retained in the wipers was much more than originally thought.

Now, before wipers are sent to the laundry, they are spun in a safe, explosion-proof centrifuge, which extracts between 2½ and 3½ gallons of "spent" solvent for every load of approximately 220 wipers. This amounts to quite a lot of solvent over time. The recovered solvent is now reused throughout the plant in a series of parts washers to clean press ink trays, instead of going out with the laundry, and the spent solvent is then sent to a fuel blender. Reuse of this solvent eliminated the purchase of more than one drum a week of virgin solvent for use in parts washers throughout the plant. The centrifuge recovery program has saved the company more than \$34,000 in the first year alone, resulting in a quick pay-back on the \$15,000 centrifuge. The centrifuge has also resulted in a sizeable reduction in the volume of solvent sent to the sewer system. Using a

centrifuge for this purpose might not be allowed in all states, but other options could be available.

The Design For The Environment Approach

This case study described how a company systematically assessed a problem, applied knowledge acquired through that assessment (along with the assistance of its trade association), and dealt with the problem in its context.

The result is a methodology that is affordable, effective, readily adaptable, and can be transferred to other printers. Environmental benefits demonstrated in this case study include reduced fugitive air emissions, less solvent discharged to the water system, and decreased toxic chemical purchases. Waste solvent is being used for energy recovery. In addition, the company has completely eliminated its use of TCA, and the safety of its work environment was greatly improved.

The methodical evaluation of a problem, leading to solutions aimed at reducing the creation of pollutants at their source, is what EPA's Design for the Environment program is seeking to encourage. While this story illustrates a method for evaluating alternatives, the company did not have access to important risk information. The DfE Printing Project seeks to provide information to industries and companies (often through their trade associations) on the comparative risk and performance of alternative chemicals, processes, and technologies, so that printers are able to make more informed decisions. EPA will make this information available in the form of a "Substitutes Assessment" later in 1993.

The search for alternative chemicals and new technologies begins with today's success. Assisting in the search for and evaluation of alternatives is the goal of EPA's DfE program. With this case study and others like it, we hope to illustrate the application of this goal and the pursuit of continuous improvement.

If you would like more information about the John Roberts Company's experience, contact:

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If you have a success story to share, and would like us to help you publicize it or

if you would like more information about the Design for the Environment program, contact:

The Pollution Prevention
Information Clearinghouse
at the U.S. EPA
Phone: 202-260-1023
Fax: 202-260-0178

